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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/512,620	02/25/2000	Harlan Sexton	50277-403	7349

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DITTHAVONG & CARLSON , P.C.
10507 BRADDOCK RD
SUITE A
FAIRFAX, VA 22032

EXAMINER
VO, LILIAN

ART UNIT	PAPER NUMBER
2127	7

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Please find below and/or attached an Office communication concerning this application or proceeding.

PRS

Office Action Summary	Application No.	Applicant(s)	
	09/512,620	SEXTON ET AL.	
	Examiner	Art Unit	
	Lilian Vo	2127	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 January 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. This office action in response to application filed on February 25, 2000. Claims 1-16 are presented for examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable by U.S. Patent No. 6,223,202 issued to Bayeh in view of U.S. Patent No. 6,330,709 issued to Johnson et al.

As per claim 1, the reference of Bayeh discloses a method for serving requests received by a server in a multiple-user environment (e.g. fig. 4), the method comprising the steps of:

Establishing a first session between said server and a first user (e.g. fig. 4, 110a, col. 7, lines 40-59);

Establishing a second session between said server and a second user (e.g. fig. 4, 110b, col. 7, lines 40-59);

Responding to requests that are received by said server in said first session by executing virtual machine code using a first virtual machine instance (e.g. col. 7, lines 51-67 – col. 8, lines 1-20, col. 9, lines 62-67 – col. 10, lines 1-9); and

Responding to requests that are received by said server in said second session by executing virtual machine code using a second virtual machine instance (e.g. col. 7, lines 51-67 – col. 8, lines 1-20, col. 9, lines 62-67 – col. 10, lines 1-9);

Wherein said first virtual machine instance and said second virtual machine instance are distinct instances of a same type of virtual machine (e.g. fig. 4, VM 152, VM 154, col. 11, lines 22-34);

Wherein said first virtual machine instance exists within said server concurrently with said second virtual machine instance (e.g. fig. 4, VM 152, VM 154, Server, 60, col. 11, lines 47-52).

While the reference of Bayeh teaches of said first machine instance and said second virtual machine instance are two of a plurality of virtual machine instances, associated with said server (e.g. col. 3 lines 56-60, col. 4, lines 8-20), it fails to explicitly teaches of wherein said first machine instance and said second virtual machine instance are two of a plurality of virtual machine instances, associated with said server that share access to data stored in a shared state area allocated in volatile memory associated with said server. The reference of Johnson et al. teaches of accessing data stored in shared address space (e.g. col. 20, lines 1-45). Therefore, it would have been obvious for one having an ordinary skill in the art at the time the invention was made to include Johnson et al. teaching to Bayeh's invention to share access to common code stored in state area between virtual machines in order for the system to save memory. This will allow the system to perform more efficiently when optimizing the system resources.

As per claim 9, it is rejected for the same reason as stated above.

4. Claims 2-5, and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable by U.S. Patent No. 6,223,202 issued to Bayeh in view of U.S. Patent No. 6,330,709 issued to Johnson et al. as applied to claims 1 and 9 above and further in view of U.S. Patent No. 6,075,938 issued to Bugnion et al.

As to claim 2, the combined references of Bayeh and Johnson et al do not explicitly disclose of the method of claim 1 further comprising the step of sharing, between said first virtual machine instance and said second virtual machine instance, a set of one or more resources within said shared state area. However, the reference of Bugnion et al. teaches of the step sharing resources between the virtual machines (e.g. fig. 4, col. 6, lines 6-67, col. 15, lines 10-26). Therefore, it would have been obvious for one having an ordinary skill in the art at the time the invention was made to include Bugnion et al. teaching to the combined teaching of Bayeh and Johnson et al. to utilize the resources between machines in order for the system to perform efficiently.

As to claim 3, the reference of Bugnion et al. do not explicitly teach of the method of claim 2 wherein the step of sharing a set of one or more resources includes sharing data associated with an object class. Instead, the reference of Bugnion et al. teaches of the virtual machines sharing the same root disk containing the kernel and application programs (e.g. col. 15, lines 10-26, Fig. 4, virtual machines shared code). "Official Notice" is taken that both the concept and advantages of relating the sharing of application programs to the sharing data associated with the object classes because sharing the code of application programs or the application programs are also involve sharing the object classes is well known and expected in the art. Therefore, it would have been obvious for one having an ordinary skill in the art at the time the invention was made to include Bugnion et al. teaching to the combined teaching of

Bayeh and Johnson et al. to provide more effective sharing of the resources between machines in order for the system to perform efficiently.

As to claim 4, the reference of Bugnion et al. teaches of the method of claim 1 wherein said plurality of virtual machine instances share read-only access to said data stored in said shared state area allocated in volatile memory within said server (e.g. fig. 4, col 6, lines 6-36). Therefore, it would have been obvious for one having an ordinary skill in the art at the time the invention was made to include Bugnion et al. teaching to the combined teaching of Bayeh and Johnson et al. to provide protection and prevention to modification to shared data that is stored in volatile memory.

As to claim 5, the reference of Johnson et al. teaches of the method of claim 1 wherein:

Said shared state area stores data associated with an object class (e.g. col. 20, lines 1-45). While the combined references of Bayeh and Johnson et al. teach of multiple virtual machines, they do not explicitly disclose said first virtual machine instance stores, in session-specific memory associated with said first virtual machine instance, a first value for a static variable associated with said object class and said second virtual machine instance stores, in session-specific memory associated with said second virtual machine instance, a second value for said static variable associated with said object class. "Official Notice" is taken that both the concept and advantages of providing for each virtual machine has to have each own session-specific memory that stores a value for a static variable associated with object class is well known and expected in the art. It would have been obvious to one having an ordinary skill in the art to include first virtual machine instance stores, in session-specific memory associated with first virtual machine instance, a first value for a static variable associated with object class and second virtual machine instance stores, in session-specific memory associated with second virtual

machine instance, a second value for static variable associated with object class to the combined teachings of Bayeh and Johnson et al. because that would retain the same data for each virtual machine after it is created until the call memory is terminated.

As per claims 10-13, they are rejected for the same reason as stated above.

5. Claims 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable by U.S. Patent No. 6,223,202 issued to Bayeh in view of U.S. Patent No. 6,330,709 issued to Johnson et al. as applied to claims 1 and 9 above and further in view of U.S. Patent No. 6,047,053 issued to Miner et al.

As to claim 6, while the combined references of Bayeh and Johnson et al. teach of virtual machine, they do not explicitly disclose of the method of claim 1 further comprising the steps of responding to a call associated with a particular session with said server by allocating a call memory for the particular virtual machine instance associated with said particular session; and discarding said call memory upon termination of said call. The reference of Miner et al. teaches of the virtual machine allocates and deallocates sessions for incoming calls (e.g. col. 22, lines 40-58). Therefore, it would have been obvious to one having an ordinary skill in the art to include the teaching of Miner et al. to the combined teachings of Bayeh and Johnson et al. in order to start and terminate the session as needed. However, the reference of Miner et al just teaches of allocating and deallocating sessions for incoming calls but does not explicitly teach of allocating and discarding a call memory. The allocating and deallocating each session for incoming calls are also required the allocating and deallocating a memory slot for each call that is associated with the particular session in order for the allocation and deallocation of the session to be done.

Therefore, the allocating and deallocating a call memory is an inherent step of the allocating and deallocating sessions for the incoming calls.

As to claim 14, it is rejected for the same reason as stated above.

6. Claims 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable by U.S. Patent No. 6,223,202 issued to Bayeh in view of U.S. Patent No. 6,330,709 issued to Johnson et al. as applied to claims 1 and 9 above and further in view by U.S. Patent No. 6,393,605 issued to Loomans.

As to claim 7, while the combined references of Bayeh and Johnson et al teach of the method of claim 1 further comprising the step of responding to a call associated with a particular session with said server for execution in a system thread, the particular virtual machine instance associated with the particular session, they fail to explicitly teach of scheduling. The reference of Loomans teaches the general process of managing multiple threads of execution (e.g. col. 8, lines 15-39, fig. 4, thread manager, 406). Therefore, it would have been obvious for one having an ordinary skill in the art at the time the invention was made to include Loomans teaching to the combined teachings of Bayeh and Johnson et al. for the purpose of managing threads execution on the particular virtual machine for balancing the workload in a system.

As to claim 15, it is rejected for the same reason as stated above

7. Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable by U.S. Patent No. 6,223,202 issued to Bayeh in view of U.S. Patent No. 6,330,709 issued to Johnson et al. as applied to claims 1 and 9 above and further in view by U.S. Patent No. 6,401,109 issued to Heiney et al.

As to claim 8, the reference of Johnson et al. further teach the steps of storing a pointer within said data structure to provide access to the data stored in the shared state area (col. 3, lines 7 – 19, col. 8, lines 1 – 4, 19 – 20, col. 10, line 58 - 65). However, the combined references of Bayeh and Johnson et al. did not clearly teach of the step of spawning the first virtual machine instance by instantiating a data structure associated with a single session. The reference of Heiney et al. teaches of spawns off a first copy of the Java virtual machine to create a second Java process object and the communication between the two Java process objects are using the same connection (e.g. col. 1, line 50 – col. 2, line 17). Therefore, it would have been obvious for one having an ordinary skill in the art at the time the invention was made to include the teaching of Heiney et al. to the combined teaching of Bayeh and Johnson et al. in order to create any of the additional objects that is necessary to perform the function requested.

As to claim 16, it is rejected for the same reason as stated above.

Response to Arguments

8. Applicants' arguments filed 1/29/03 have been fully considered but are not persuasive.

9. As per applicants' comment regarding the feature in which "data stored in a shared state are allocated in volatile memory ..." page 11, lines 1 – 2 point out the fact that permanent storage teaches against allocating data in volatile memory. In agreeing upon this assertion, the reference Johnson et al., in fact, disclose the feature in which "JVM can store objects in either temporary local storage or in permanent SAS storage" in col. 20, lines 9 – 20, further designate the case in which only temporary storage can be used to store objects that would be deleted from memory (temporary) as soon as the application which creates them removed from memory

(temporary). Hence, as per applicants' remarks, memory used here for temporary storage must be volatile. Furthermore, it has been considered a common well-known feature in the computer field in which, computer RAM, or volatile memory, is used for temporary data storage and retrieval purposes, as opposed to non-volatile memory type, generally used for permanent Read only purpose.

10. As per applicants' remarks regarding the feature in which "the use of the shared address space (SAS) is only disclosed in Johnson et al. to be between a JVM and an application, not between 'two of a plurality of virtual machine instances' as recited in the claims" (page 11, bottom of the last paragraph).

Johnson et al. disclose that Java object-oriented systems are performed by one object calling a method on another object and these objects can reside locally on the same machine or on separate JVM's physically located on separate computers or systems (col. 6, lines 9 –20). Hence, this indicates that objects on separate JVMs can also be shared as well.

11. Because Applicants have failed to challenge any of the Examiner's "Official Notices" in a proper and seasonably manner, they are now considered as admitted prior art. See MPEP 2144.03.

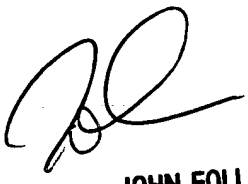
Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lilian Vo whose telephone number is (703) 305-7864.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.



JOHN FOLLANSBEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

Lilian Vo
Examiner
Art Unit 2127

lv
March 26, 2003